



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA-2018-0011; Notice No. 25-18-01-SC]

Special Conditions: SWS Certification Services, Ltd., Boeing Model 747-8 Airplanes;

Installation of an Overhead Passenger-Sleeping Compartment in the Main Deck

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed special conditions.

SUMMARY: This action proposes special conditions for the Boeing Model 747-8 airplane. This airplane, as modified by SWS Certification Services, Ltd. (SWS), will have a novel or unusual design feature when compared to the state of technology envisioned in the airworthiness standards for transport-category airplanes. This design feature is the installation of an overhead passenger-sleeping compartment in the main deck. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These proposed special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: Send your comments on or before [INSERT DATE 20 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: Send comments identified by docket number FAA-2018-0011 using any of the following methods:

- *Federal eRegulations Portal:* Go to <http://www.regulations.gov/> and follow the online instructions for sending your comments electronically.

- *Mail:* Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE., Room W12-140, West Building Ground Floor, Washington, DC, 20590-0001.
- *Hand Delivery or Courier:* Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- *Fax:* Fax comments to Docket Operations at 202-493-2251.

Privacy: The FAA will post all comments it receives, without change, to <http://www.regulations.gov/>, including any personal information the commenter provides. Using the search function of the docket Web site, anyone can find and read the electronic form of all comments received into any FAA docket, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). DOT's complete Privacy Act Statement can be found in the **Federal Register** published on April 11, 2000 (65 FR 19477-19478).

Docket: Background documents or comments received may be read at <http://www.regulations.gov/> at any time. Follow the online instructions for accessing the docket or go to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Alan Sinclair, FAA, Airframe and Cabin Safety Section, AIR-675, Transport Standards Branch, Policy and Innovation Division, Aircraft Certification

Service, 1601 Lind Avenue SW., Renton, Washington 98057-3356; telephone 425-227-2195; facsimile 425-227-1320.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data.

We will consider all comments we receive by the closing date for comments. We may change these special conditions based on the comments we receive.

Background

On February 10, 2016, SWS applied for a supplemental type certificate for the installation of overhead passenger-sleeping compartments in the main deck of Boeing Model 747-8 airplanes. The Model 747-8 airplane is a wide-body airplane equipped with four turbofan engines. This airplane has a maximum seating capacity of 605 passengers and 12 cabin crewmembers, and has a maximum takeoff weight of 987,000 lbs.

Type Certification Basis

Under the provisions of title 14, Code of Federal Regulations (14 CFR) 21.101, SWS must show that the Boeing Model 747-8 airplane, as changed, continues to meet the applicable provisions of the regulations listed in Type Certificate No. A20WE, or the applicable regulations in effect on the date of application for the change, except for earlier amendments as agreed upon by the FAA. The regulations listed in the type certificate are commonly referred to as the “type certification basis.” The

certification basis for the Model 747-8 is part 25, as amended by amendment 25-1 through amendment 25-120, with exceptions permitted by § 21.101.

In addition, the certification basis includes certain special conditions, exemptions, or later amended sections of the applicable part that are not relevant to these proposed special conditions.

If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 25) do not contain adequate or appropriate safety standards for the Boeing Model 747-8 airplane because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the applicant apply for a supplemental type certificate to modify any other model included on the same type certificate to incorporate the same novel or unusual design feature, these special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the Model 747-8 airplane must comply with the fuel-vent and exhaust-emission requirements of 14 CFR part 34, and the noise-certification requirements of 14 CFR part 36.

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type certification basis under § 21.101.

Novel or Unusual Design Features

The Boeing Model 747-8 airplane, as modified by SWS, will incorporate the following novel or unusual design feature: Overhead passenger-sleeping compartments in the main deck.

Discussion

SWS, located in the United Kingdom, proposes to install an Aeroloft™ Overhead Passenger Sleeping/Rest Compartment (OPSC) in the crown area of the Boeing Model 747-8 airplane, in front of the Overhead Flight Attendant Rest (OFAR) Compartment. The operation of this airplane is limited for private use only, not for hire, not for common carriage. The OPSC is similar in function and design to the OFAR but will be for passenger use. Specifically, the OPSC consists of eight passenger-sleeping compartments, with single occupancy for each compartment. The OPSC includes a station for a trained flight attendant, and is intended for in-flight use only; not during taxi, takeoff, or landing. The size of the installation is similar to the OFAR and will have a separate staircase for access in the front of the compartment, in the main deck near the door 4 area. The OPSC is open for passengers only when a flight attendant is present in the OPSC. This dedicated flight attendant is allocated for passenger briefing on emergency procedures, evacuation, and for the use of emergency equipment and systems within the OPSC.

These special conditions establish seating, communication, lighting, personal safety, and evacuation requirements for the OPSC compartment. In addition, passenger information signs and placards, supplemental oxygen, and a seat or berth for each occupant of the OPSC compartment are required. These items are necessary because of turbulence and/or decompression. When applicable, the requirements parallel the existing requirements for an overhead service compartment, and provide an equivalent level of safety to that provided for main-deck occupants.

These proposed special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

Applicability

As discussed above, these special conditions are applicable to the Boeing Model 747-8 airplane as modified by SWS. Should SWS apply at a later date for a supplemental type certificate to modify any other model included on Type Certificate No. A20WE, to incorporate the same novel or unusual design feature, these special conditions would apply to that model as well.

Conclusion

This action affects only certain novel or unusual design features on one model series of airplane. It is not a rule of general applicability and affects only the applicant who applied to the FAA for approval of these features on the airplane.

List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

The Proposed Special Conditions

Accordingly, the Federal Aviation Administration (FAA) proposes the following special conditions as part of the type certification basis for Boeing Model 747-8 airplanes, operated for private use only, not for hire, not for common carriage, as modified by SWS Certification Services, Ltd.

- 1) During flight, occupancy of the Overhead Passenger Sleeping/Rest Compartment is limited to the total number of installed bunks in the compartment that are approved to the maximum flight-loading conditions. Therefore, the OPSC is limited to a maximum of eight occupants for in-flight use only.
 - a) Occupancy of the OPSC is for passengers only when a dedicated flight attendant is present in the OPSC.
 - b) The OPSC design must include appropriate placards located inside and outside each entrance to the OPSC to indicate:
 - i) The maximum number of eight occupants allowed during flight.
 - ii) Occupancy is prohibited during taxi, take-off, and landing.
 - iii) Smoking is prohibited in the OPSC.
 - iv) Stowage in the OPSC area is limited to personal luggage. The stowage of cargo is not allowed.
 - c) The airplane must contain at least one ashtray on both the inside and the outside of any entrance to the OPSC.
- 2) The following requirements are applicable to OPSC door(s):
 - a) For any door installed between the OPSC and the passenger cabin, a means must be provided to allow the door to be quickly opened from inside the OPSC, even when crowding from an emergency evacuation occurs at each side of the door.
 - b) Doors installed across emergency egress routes must have a means to latch them in the open position. The latching means must be able to withstand the loads imposed upon it when the door

is subjected to the ultimate inertia forces, relative to the surrounding structure, listed in § 25.561(b).

- c) The OPSC design must include a placard displayed in a conspicuous location on the outside of the entrance door of the OPSC, and on any other door(s) installed across emergency egress routes of the OPSC, requiring those doors to be latched closed during taxi, takeoff, and landing (TT&L).
 - i) This requirement does not apply to emergency-escape hatches installed in the OPSC.
 - ii) The OPSC design must include a placard displayed in a conspicuous place on the outside of the entrance door to the OPSC that requires the door to be closed and locked when it is not occupied.
 - iii) The design-approval holder must transmit procedures for meeting these requirements to the operator for incorporation into training programs and appropriate operational manuals.
 - d) For all outlet doors installed in the OPSC, a means must be in place to preclude anyone from being trapped inside the OPSC. If the design installs a locking mechanism, the locking mechanism must be capable of being unlocked from the outside without the aid of special tools. The lock must not prevent opening from the inside of the OPSC at any time.
- 3) At least two emergency-evacuation routes must be available, and which could be used by each occupant of the OPSC to rapidly evacuate to the main cabin. A person must be able to close these evacuation routes from the main passenger cabin after evacuation. In addition;
- a) The design must include routes with sufficient separation within the OPSC to minimize the possibility of an event either inside or outside of the OPSC, rendering both routes inoperative.

The design-approval holder may show compliance by inspection or by analysis. Regardless of which method is used, the maximum acceptable distance between OPSC exits is 60 feet.

- b) The design-approval holder must design routes to minimize the possibility of blockage, which might result from fire, mechanical or structural failure, or persons standing below or against the OPSC outlets. If an evacuation route is in an area where normal movement or evacuation of passengers occurs, the applicant must demonstrate that passengers would not impede egress to the main deck. If low headroom is at or near the evacuation route, the design must make provisions to prevent or to protect occupants of the OPSC from head injury. Use of evacuation routes must not depend on any powered device. If an OPSC evacuation route outlet is over an area of passenger seats, the design may allow the temporary displacement of a maximum of five passengers from their seats during the process of evacuating an incapacitated person(s). If such an evacuation procedure involves the evacuee stepping on seats, the evacuee must not damage seats to the extent that the seats would not be acceptable for occupancy during an emergency landing.
- c) The design-approval holder must establish emergency-evacuation procedures, including procedures for emergency evacuation of an incapacitated occupant from the OPSC. The design-approval holder must transmit all of these procedures to the operator for incorporation into training programs and appropriate operational manuals.
- d) The design-approval holder must include a limitation in the airplane flight manual (AFM), or other suitable means, to require that crewmembers are trained in the use of the OPSC

evacuation routes. This training must instruct crewmembers to ensure that the OPSC (including seats, doors, etc.) is in the proper TT&L configuration during TT&L.

- e) In the event no flight attendant is present in the area around the OPSC outlet door, and also during an emergency, including an emergency evacuation, a means must be available to prevent passengers from entering the OPSC.
 - f) Doors or hatches separating the OPSC from the main deck must not adversely affect evacuation of occupants on the main deck (slowing evacuation by encroaching into aisles, for example), or cause injury to those occupants during opening or while opened.
 - g) The means of opening outlet doors and hatches to the OPSC compartment must be simple and obvious. The OPSC compartment outlet doors and hatches must be able to be closed from the main passenger cabin.
- 4) A means must be available for evacuating an incapacitated person (representative of a 95th percentile male) from the OPSC compartment to the passenger cabin floor. The design-approval holder must demonstrate such an evacuation for all evacuation routes.
- 5) The design-approval holder must provide the following signs and placards in the OPSC, and the signs and placards must meet the following criteria:
- a) At least one exit sign, located near each OPSC evacuation-route outlet, meeting the emergency-lighting requirements of § 25.812(b)(1)(i). One allowable exception would be a sign with reduced background area of no less than 5.3 square inches (excluding the letters), provided that it is installed so that the material surrounding the exit sign is light in color (white, cream, light beige, for example). If the material surrounding the exit sign is not light in color, a sign with a

minimum of a one-inch-wide background border around the letters would be acceptable.

Another allowable exception is a sign with a symbol that the FAA has determined to be equivalent for use as an exit sign in an OPSC.

- b) The OPSC design must conspicuously locate an appropriate placard on or near each OPSC outlet door or hatch that defines the location and the operating instructions for access to, and operation of, the outlet door or hatch.
 - c) Placards must be readable from a distance of 30 inches under emergency lighting conditions.
 - d) The design must illuminate the door or hatch handles and operating-instruction placards, required by Special Condition 5b of these special conditions, to at least 160 microlamberts under emergency-lighting conditions.
- 6) An automatic means of emergency illumination must be available in the OPSC in the event of failure of the airplane main power system, or failure of the normal OPSC lighting system.
- a) The design must power this emergency illumination independently of the main lighting system.
 - b) The sources of general cabin illumination may be common to both the emergency and the main lighting systems if the power supply to the emergency lighting system is independent of the power supply to the main lighting system.
 - c) The illumination level must be sufficient to allow occupants of the OPSC to locate and move to the main passenger cabin floor by means of each evacuation route.
 - d) The illumination level must be sufficient, with the privacy curtains in the closed position, for each occupant of the OPSC compartment to locate a deployed oxygen mask.

- 7) A means must be available for two-way voice communications between crewmembers on the flight deck and occupants of the OPSC. Two-way communications must also be available, between occupants of the OPSC and each flight-attendant station in the passenger cabin, per § 25.1423(g) for areas required to have a public-address-system microphone. In addition, the public-address system must include provisions to provide only the relevant information to the crewmembers in the OPSC (e.g., fire in flight, airplane depressurization, preparation of the compartment for landing, etc.). That is, provisions must be made so that occupants of the OPSC will not be disturbed with normal, non-emergency announcements made to the passenger cabin.
- 8) A means must be available for manual activation of an aural emergency-alarm system, audible during normal and emergency conditions, to enable crewmembers on the flight deck and at each pair of required floor-level emergency exits to alert occupants of the OPSC of an emergency situation. Use of a public-address or crew-interphone system will be acceptable, provided an adequate means of differentiating between normal and emergency communications is incorporated. The design must power the system in flight, after the shutdown or failure of all engines and auxiliary power units, for a period of at least ten minutes.
- 9) A means must be in place, readily detectable by seated or standing occupants of the OPSC, to indicate when seat belts should be fastened. The design must provide seatbelt-type restraints for berths and must be compatible with the sleeping position during cruise conditions. A placard on each berth must require that these restraints be fastened when occupied. If compliance with any of the other requirements of these special conditions is predicated on specific head position, a placard must identify that head position.

10) In lieu of the requirements specified in § 25.1439(a) pertaining to isolated compartments, and to provide a level of safety equivalent to that provided to occupants of an isolated galley, the design must provide the following equipment in the OPSC:

- a) At least one approved, hand-held fire extinguisher appropriate for the kinds of fires likely to occur.
- b) Two protective breathing equipment (PBE) devices, suitable for firefighting, or one PBE for each hand-held fire extinguisher, whichever is greater. All PBE devices must be approved to Technical Standard Order (TSO)-C116 or equivalent.
- c) One flashlight.

Note: The design may require additional PBE devices and fire extinguishers in specific locations, beyond the minimum numbers prescribed in Special Condition 10 as a result of the egress analysis accomplished to satisfy Special Condition 4.

11) The design must provide a smoke- or fire-detection system (or systems) to monitor each occupiable space within the OPSC, including those areas partitioned with curtains or doors. The design-approval holder must conduct flight tests to show compliance with this requirement. If a fire occurs, each system must provide:

- a) A visual indication to the flight deck within one minute after the start of a fire.
- b) An aural warning in the OPSC compartment.
- c) A warning in the main passenger cabin. A flight attendant must readily detect this warning, taking into consideration the locations of flight attendants throughout the main passenger compartment during various phases of flight.

12) The design must provide a means to fight a fire. This ability can be either a built-in extinguishing system or a manual, hand-held extinguishing system.

a) For a built-in extinguishing system:

- i) The system must have adequate capacity to suppress a fire considering the fire threat, volume of the compartment, and the ventilation rate. The system must have sufficient extinguishing agent to provide an initial knockdown and suppression environment per the minimum performance standards that have been established for the agent being used. In addition, certification flight testing will verify the acceptable duration that the suppression environment can be maintained.
- ii) If the capacity of the extinguishing system does not provide effective fire suppression that will last for the duration of flight from the farthest point in route to the nearest suitable landing site expected in service, the design-approval holder must establish an additional manual firefighting procedure. For the built-in extinguishing system, the design must establish and document the time duration for effective fire suppression in the firefighting procedures in the AFM. If the duration of time for demonstrated effective fire suppression provided by the built-in extinguishing agent will be exceeded, the firefighting procedures must instruct the crew to:
 - (1) Enter the OPSC at the time that demonstrated fire-suppression effectiveness will be exceeded.
 - (2) Check for and extinguish all residual fire.
 - (3) Confirm that the fire is out.

- b) For a manual, hand-held extinguishing system (designed as the sole means to fight a fire or to supplement a built-in extinguishing system of limited suppression duration) for the OPSC:
 - i) The design-approval holder must include a limitation in the AFM or other suitable means requiring that crewmembers be trained in firefighting procedures.
 - ii) The OPSC design must allow crewmembers equipped for firefighting to have unrestricted access to all parts of the OPSC.
 - iii) The time for a crewmember on the main deck to react to the fire alarm, don the firefighting equipment, and gain access to the OPSC must not exceed the time it would take for the compartment to become filled with smoke, thus making it difficult to locate the fire source.
 - iv) The design-approval holder must establish approved procedures describing methods for searching the OPSC for fire source(s). The design-approval holder must transmit these procedures to the operator for incorporation into its training programs and appropriate operational manuals.
- 13) Design must provide a means to prevent hazardous quantities of smoke or extinguishing agent, originating in the OPSC, from entering any other occupiable compartment.
 - a) Small quantities of smoke may penetrate from the OPSC into other occupied areas during the one-minute smoke detection time.
 - b) A provision in the firefighting procedures must ensure that all doors and hatches at the OPSC outlets are closed after evacuation of the compartment and during firefighting to minimize smoke and extinguishing agent entering other occupiable compartments.

- c) All smoke entering any occupiable compartment, when access to the OPSC is open for evacuation, must dissipate within five minutes after the access to the OPSC is closed.
- d) Hazardous quantities of smoke may not enter any occupied compartment during access to manually fight a fire in the OPSC. The amount of smoke entrained by a firefighter exiting the OPSC is not considered hazardous.
- e) The design-approval holder must conduct flight tests to show compliance with this requirement.

14) A supplemental oxygen system within the OPSC must provide the following:

- a) At least one oxygen mask for each berth in the OPSC.
- b) If the OPSC provides a destination area (such as a changing area), an oxygen mask must be readily available for each occupant who can reasonably be expected to be in the destination area, with the maximum number of required masks within the destination area being limited to the placarded maximum occupancy of the OPSC.
- c) An oxygen mask must be readily accessible to each occupant who can reasonably be expected to be moving from the main cabin into the OPSC, moving around within the OPSC, or moving from the OPSC to the main cabin.
- d) The system must provide an aural and visual alert to warn occupants of the OPSC to don oxygen masks in the event of decompression. The aural and visual alerts must activate concurrently with deployment of the oxygen masks in the passenger cabin. To compensate for sleeping occupants, the aural alert must be heard in each section of the OPSC and must sound continuously for a minimum of five minutes or until a reset switch within the OPSC is activated.

A visual alert that informs occupants that they must don an oxygen mask must be visible in each section.

- e) The design must provide a means by which oxygen masks can be manually deployed from the flight deck.
- f) The design-approval holder must establish approved procedures for the OPSC in the event of decompression. The design-approval holder must transmit these procedures to the operator for incorporation into its training programs and appropriate operational manuals.
- g) The supplemental oxygen system for the OPSC must meet the same part 25 regulations as the supplemental oxygen system for the passenger cabin occupants, except for the 10 percent additional-masks requirement of § 25.1447(c)(1).

15) The following additional requirements apply to an OPSC that are divided into several sections by the installation of curtains or partitions:

- a) The OPSC design requires a placard adjacent to each curtain that visually divides or separates, for example, for privacy purposes, the OPSC into multiple sections. The placard must require that the curtain(s) remains open when the section it creates is unoccupied. The vestibule section adjacent to the stairway is not considered a private section and, therefore, does not require a placard.
- b) For each section of the OPSC created by the installation of a curtain, the following requirements of these special conditions must be met with the curtain open or closed:
 - i) No-smoking placard requirement (Special Condition 1).
 - ii) Emergency illumination requirement (Special Condition 6).

- iii) Emergency alarm-system requirement (Special Condition 8).
 - iv) Seatbelt-fasten signal or return-to-seat signal as applicable requirement (Special Condition 9).
 - v) Smoke- or fire-detection system requirement (Special Condition 11).
 - vi) Oxygen-system requirement (Special Condition 14).
- c) OPSC that are visually divided to the extent that evacuation could be adversely affected must have exit signs directing occupants to the primary stairway outlet. The design must provide exit signs in each separate section of the OPSC, except for curtained bunks, and must meet requirements of § 25.812(b)(1)(i). The design-approval holder may use an exit sign with reduced background area or a symbolic exit sign, as described in special condition 5a, to meet this requirement.
- d) For sections within an OPSC created by the installation of a rigid partition with a door separating the sections, the design must meet the following special conditions with the door open or closed:
- i) A secondary evacuation route from each section to the main deck, or the applicant must show that any door between the sections precludes anyone from being trapped inside a section of the compartment. The design must consider the removal of an incapacitated occupant from within this area. The design does not require a secondary evacuation route from a small room designed for only one occupant for a short time duration, such as a changing area or lavatory, but the design must consider the removal of an incapacitated occupant from within such a small room.

- ii) The design-approval holder must show any door between the sections to be openable when crowded against, even when crowding occurs at each side of the door.
 - iii) The design may locate no more than one door between any seat or berth and the primary stairway door.
 - iv) In each section, exit signs meeting the requirements of § 25.812(b)(1)(i), or shown to have an equivalent level of safety, must direct occupants to the primary stairway outlet. The design may use an exit sign with reduced background area, or a symbolic exit sign, as described in special condition 5a, to meet this requirement.
 - v) The design must meet special conditions 1 (no-smoking placards), 6 (emergency illumination), 8 (emergency alarm system), 9 (fasten-seatbelt signal or return-to-seat signal as applicable), 11 (smoke- or fire-detection system), and 14 (oxygen system) with the OPSC door open or closed.
 - vi) The design must meet special conditions 7 (two-way voice communication) and 10 (emergency firefighting and protective equipment) independently for each separate section, except for lavatories or other small areas that are not intended to be occupied for extended periods of time.
- 16) If a waste-disposal receptacle is fitted in the OPSC, it must be equipped with an automatic fire extinguisher that meets the performance requirements of § 25.854(b).
- 17) Materials (including finishes or decorative surfaces applied to the materials) must comply with the flammability requirements of § 25.853 as amended by amendment 25-116 or later. Seat cushions and mattresses must comply with the flammability requirements of § 25.853(c) as amended by

amendment 25-116 or later, and the test requirements of part 25, appendix F, part II, or other equivalent methods.

- 18) The addition of a lavatory within the OPSC would require the lavatory to meet the same requirements as those for a lavatory installed on the main deck, except with regard to special condition 11 for smoke detection.
- 19) The design must completely enclose each stowage compartment in the OPSC, except for underseat compartments for occupant convenience. All enclosed stowage compartments within the OPSC that are not limited to stowage of emergency equipment or airplane-supplied equipment (i.e., bedding) must meet the design criteria described in the table below. Enclosed stowage compartments greater than 200 ft.³ in interior volume are not addressed by this special condition. The in-flight accessibility of very large, enclosed, stowage compartments and the subsequent impact on the crewmembers' ability to effectively reach any part of the compartment with the contents of a hand-held fire-extinguishing system, will require additional fire-protection considerations similar to those required for inaccessible compartments such as Class C cargo compartments.
- 20) The AFM must state that this airplane is to be operated for private use only, not for hire, not for common carriage.

**Design Criteria for Enclosed Stowage Compartments Not Limited
to Stowage of Emergency or Airplane-Supplied Equipment**

Fire Protection Features	Applicability of fire protection requirements by interior volume		
	less than 25 ft ³	25 ft ³ to 57 ft ³	57 ft ³ to 200 ft ³
Compliant Materials of Construction ¹	Yes	Yes	Yes
Smoke or Fire Detectors ²	No	Yes	Yes
Liner ³	No	Conditional	Yes

Fire Protection Features	Applicability of fire protection requirements by interior volume		
	less than 25 ft ³	25 ft ³ to 57 ft ³	57 ft ³ to 200 ft ³
Fire Location Detector ⁴	No	Yes	Yes

¹ **Compliant Materials of Construction:** The material used in constructing each enclosed stowage compartment must at least be fire resistant and must meet the flammability standards established for interior components (i.e., part 25 Appendix F, Parts I, IV, and V) per the requirements of § 25.853. For compartments less than 25 ft.³ in interior volume, the design must ensure the ability to contain a fire likely to occur within the compartment under normal use.

² **Smoke or Fire Detectors:** Enclosed stowage compartments equal to or exceeding 25 ft.³ in interior volume must be provided with a smoke- or fire-detection system to ensure that a fire can be detected within a one-minute detection time. Flight tests must be conducted to show compliance with this requirement. Each system (or systems) must provide:

- (a) A visual indication in the flight deck within one minute after the start of a fire.
- (b) An aural warning in the OPSC.
- (c) A warning in the main passenger cabin. This warning must be readily detectable by a flight attendant, taking into consideration the locations of flight attendants throughout the main passenger compartment during various phases of flight.

³ **Liner:** If material used in constructing the stowage compartment can be shown to meet the flammability requirements of a liner for a Class B cargo compartment (i.e., § 25.855 at amendment 25–116, and Appendix F, part I, paragraph (a)(2)(ii)), then no liner would be required for enclosed stowage compartments equal to or greater than 25 ft.³ but less than 57 ft.³ in interior volume. For all enclosed stowage compartments equal to or greater than 57 ft.³ in interior volume but less than or equal to 200 ft.³, a liner must be provided that meets the requirements of § 25.855 for a Class B cargo compartment.

⁴ **Fire-Location Detector:** If an OPSC has enclosed stowage compartments exceeding 25 ft.³ interior volume and that are located separately from the other stowage compartments (located, for example, away from one central location, such as the entry to the OPSC or a common area within the OPSC, where the other stowage compartments are), that OPSC would require additional fire-protection features or devices to assist the firefighter in determining the location of a fire.

Issued in Renton, Washington, on February 15, 2018.

Victor Wicklund,

Manager, Transport Standards Branch,

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